1992
Executive Research Project
DIS 12

Baseline Assessment of the Domestic Airline Industry

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b. DECLASSIFICATION / DOWNGRADING SCHEDULE N/A	release; distribution is unlimited.
PERFORMING ORGANIZATION REPORT NUMBER(S) NDU-ICAF-92-D15 12	5. MONITORING ORGANIZATION REPORT NUMBER(S) Same
a. NAME OF PERFORMING ORGANIZATION Industrial College of the Armed Forces 6b. OFFICE SYMBOL (If applicable) ICAF-FAP	7a. NAME OF MONITORING ORGANIZATION National Defense University
c. ADDRESS (City, State, and ZIP Code) Fort Lesley J. McNair Washington, D.C. 20319-6000	7b. ADDRESS (City, State, and ZIP Code) Fort Lesley J. McNair Washington, D.C. 20319-6000
a. NAME OF FUNDING / SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.

1. TITLE (Include Security Classification)
Baseline Assessment of the Domestic Airline Industry

2. PERSONAL AUTHOR(S) Michael W. Wooley

3a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Research	FROM Aug 91 TO Apr 92	April 92	55

6. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	

9. ABSTRACT (Continue on reverse if necessary and identify by block number)

SEE ATTACHED

20. DISTRIBUTION / AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION Unclassified
22a. NAME OF RESPONSIBLE INDIVIDUAL Judy Clark	22b. TELEPHONE (Include Area Code) (202) 475-1889 22c. OFFICE SYMBOL ICAF-FAP

DTIC 12

ABSTRACT

TITLE: Baseline Assessment of the Domestic Airline Industry

AUTHOR: Michael W. Wooley

PURPOSE: To discuss the current status and economic health of the domestic segment of the United States' airline industry.

INTENDED READERSHIP: Those who have an interest in the structure, conduct, and performance of the domestic segment of the United States' airline industry.

BRIEF SUMMARY: This paper examines the recent history and current status of the United States' domestic airline industry. It identifies certain trends and looks at the economic well being of this segment of the industry. The national security objectives of the United States rely on the airline infrastructure, therefore, industry strength has a direct impact on our ability to execute those objectives. By studying the major passenger and cargo carriers, certain conclusions are made about the domestic airline industry's capability, health, and means to support our national security objectives.

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DISCLAIMER

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INTRODUCTION

Overview

The focus of this paper is an examination of the commercial airlift capability of the United States. Specifically, it looks at the civilian passenger and cargo airlines and assesses their current status and economic "health." It is said that the airline industry mirrors the economy. During the uncertainty of a recession, it is important for the Department of Defense and the nation to know the capabilities of their airline industry.

With a "New World Order," military cutbacks, demobilization, and the end of the "Cold War" -- reliance on a strong and efficient airlift capability is paramount. One only has to look back to the beginning of Desert Shield/Desert Storm in August 1990 to validate this thesis. The logistical buildup and sustainment of the armed forces in the Persian Gulf would have been impossible without the United States airline industry.

However, in 1990 the airlines suffered their worst financial year in history. Leisure travel declined drastically due to the Persian Gulf war and the recession. Fuel prices (a major airline expense) roughly doubled between July and October of that year, paving the way for huge dollar losses with the forecast over the short-run equally grim.[1]

Finding the underlying reasons for the tough times airlines are currently experiencing is the goal of this assessment. The paper covers the *structure*, *conduct*, and *performance* of the

airline industry. *Structure* includes the concentration of the market, employment trends, the barriers to market entry, and a discussion of the Civil Reserve Air Fleet (CRAF). *Conduct* examines airline costs, pricing structure, and investments. *Performance* explores profitability and productivity. Finally after discussing some environmental issues and airport issues, the paper presents its conclusions.

Standard Industrial Classification Codes

Industries in the United States are categorized by Standard Industrial Classification (SIC) Codes assigned by the US Government Office of Management and Budget. Major Group 45 is the air portion of the transportation industry. This paper is limited to assessing the top four passenger and top two cargo carriers in SIC 4512 -- Air Transportation, Scheduled. These are airlines primarily engaged in furnishing air transportation over regular routes and on regular schedules.[2] Other passenger and cargo airlines will be addressed as necessary.

Deregulation

In 1938, the Civil Aeronautics Board (CAB) was established to govern the economic regulation of airlines in the United States. Until 1978 it controlled route structures, ticket prices, cargo rates, and entry into the industry. The Airline Deregulation Act of 1978 marked the beginning of the end for the CAB. Deregulation slowly liberalized the Board's policies toward

US commercial aviation. By the end of 1984, the CAB was dissolved and its remaining functions transferred to the Department of Transportation (DOT).[3] As a result, the airlines compete with each other on the basis of cost, price, performance, and service.

The immediate impact of deregulation was rapid expansion of airlines offering service, resulting in increased capacity and frequency of flights. In recent years, the number of carriers has declined; some have gone out of business (e.g. Eastern) and some have merged (e.g. Federal Express and Flying Tigers).[4]

STRUCTURE

The US commercial airline industry has approximately 230 carriers including those offering scheduled, charter, and on-demand transportation services for passengers and cargo. Of these, 72 carriers operate fleets of aircraft with more than 60 seats, a maximum payload of more than 18,000 lb., or conduct international operations and provide the vast majority of all service.[5]

It is important to note that the US airlines have a relatively small number of sellers with a large number of buyers (an oligopoly).

Passenger Airline Concentration

The common denominator I am using to determine passenger airline concentration is total operating revenues (TOR) as

compiled by the Air Transport Association of America (ATA), a US airline trade association. In its 1991 annual report, the association lists the top 25 US airlines in 1990 (see figure 1). What clearly emerges are the top four passenger airlines in terms of TOR -- American with $11 billion, United $10.9 billion, Delta $8.7 billion, and Northwest $7.3 billion. The total TOR of the top 25 is $74.7 billion with these four airlines accounting for 51%. This indeed is a highly concentrated industry segment.

American Airlines

American Airlines is the principle subsidiary of The AMR Corporation. It is the largest US airline, serving airports in 40 states and the District of Columbia, as well as Canada, the Caribbean, Mexico, Australia, and Western Europe. In 1991, American's scheduled commercial flights averaged over 1,915,000 miles daily. Service over most of American's routes is highly competitive -- the airline competes with one or two major airlines on each of its route segments. However, American doesn't believe it is at a competitive disadvantage because of what it considers superior pricing, scheduling, or marketing. It is continuing to expand both domestic and international routes. In 1987, American integrated the route network of AirCal into the its system and in 1990 executed an agreement to acquire international routes and facilities from TWA.[6]

United Airlines

United has been engaged in the air transportation of people, cargo, and mail since 1934. It is one of the world's largest investor-owned airlines and has developed a route system that spans North America, Asia, the South Pacific, and Europe. As with most major airlines, United uses a hub-and-spoke system and schedule pattern in an attempt to maximize the revenue potential of its service. The hub system permits travelers to fly from point of origin to more destinations without switching carriers and provides the airline more effective use of aircraft. In addition, each flight arriving at a hub airport increases the revenue-generation capability of departing trips. United has one international and four domestic hubs. Its marketing strategy is driven by three principle competitive factors: schedule convenience, overall customer service, and price. The company anticipates that seasonal factors and general economic conditions, in addition to industry-wide fare levels, labor and fuel costs, will continue to impact their operation.[7]

Delta Air Lines

Delta Air Lines is a major air carrier providing scheduled air transportation for passengers, freight, and mail over a network of routes throughout the United States and abroad. It serves 160 domestic cities in 45 states, the District of Columbia and Puerto Rico as well as 32 international destinations. Delta also use the hub-and-spoke system with six hubs located in

Atlanta, Dallas/Ft. Worth, Salt Lake City, Cincinnati, Los Angeles, and Orlando. Each of these hub operations includes flights which gather and distribute traffic for markets in the geographic region surrounding the hub, flights to other major cities, and flights to other Delta hubs. Delta, like the other major carriers, is expanding operations. It recently merged with Western Airlines, and acquired the Pan Am shuttle and certain international routes plus aircraft from Pan Am.[8]

Northwest Airlines

Northwest Airlines is the nation's fourth-largest passenger airline, beginning operations in 1926. It serves 133 cities in 21 countries on four continents -- Asia, Europe, North America, and Australia. Its US system spans 41 states and operates hubs in Detroit, Minneapolis/St. Paul, Memphis, Wasnington DC, and Tokyo. Northwest strengthened its US route system by acquiring Republic Airlines in 1986. In 1989, it became a privately held corporation in a $3.65 billion transaction. In 1990, Northwest bought 25% of Hawaiian Airlines in hopes of expanding its Pacific market and is exploring a partnership with Australia's Qantas Airline. It is also expecting to initiate service to Beijing in 1992 and is exploring the possibility of a route to Russia in the near future. Northwest became America's most on-time major airline in 1990 and continues to lead in on-time performance in 1991. It has experienced accelerated growth over the past two years with the intent to serve more customers as it strives to

become a premiere global airline. Northwest says it will continue this aggressive growth strategy throughout the 1990s.[9]

Cargo Airline Concentration

Figure 1 shows that of the top 25 airlines, three are cargo-only carriers -- Federal Express, United Parcel Service, and Evergreen. Federal Express is by far the largest of the three with a TOR of $7.6 billion. United Parcel Service follows with $891 million and Evergreen with $218 million. These three airlines only account for 11.5% of the total TOR for the top 25. However, Federal Express has 10.2% alone placing 4th between Delta and Northwest. Again this is a very concentrated market segment. Federal Express and UPS offers a good basis for comparison.

Federal Express

Federal Express is the world's largest express cargo transportation company serving 139 countries. In addition to its international service, Federal Express provides overnight direct delivery service of parcels and documents to virtually all of the US. Starting its operations in April 1973, it began showing a profit in 1976. In 1983, it had $1 billion in revenues -- the first American business in history to reach that hallmark in 10 years after start-up without the benefits of mergers or acquisitions. Federal Express attributes its success to the hub and spoke system of distribution which it invented and is used by

most airlines (passenger and cargo). Its operation is computerized which allows tracking of every package from pick-up to delivery. It also automatically routes the packages the fastest way to destination. Memphis is the company's superhub where most of the sorting and distribution is done. A crew of 14 can unload 44,000 pounds of freight in 12 minutes. The last plane lands in Memphis at 1:12AM and by 3:43AM all the planes are airborne. With a fleet of 432 aircraft, Federal Express has the capability to move 14 million pounds of cargo daily. It is continually expanding through company acquisitions -- the largest was Flying Tigers in 1989 and the latest was Aeroenvios S.A. de C.V., Mexico in 1990.[10]

United Parcel Service

UPS has been operating as an independent airline since 1988; however, its roots as a trucking company trace back to Seattle 80 years ago and flying operations go back to 1929 in Ford Tri-Motors. Today it operates a fleet of 162 jet aircraft and charter an additional 259. UPS serves more than 600 domestic and international airports in 180 countries. It also uses an extensive hub and spoke system as the basis of its delivery. The main hub is in Louisville with others in Dallas-Ft Worth, Miami, Philadelphia, Ontario, Cologne/Bonn, Hong Kong, and Singapore. Unlike Federal Express, UPS didn't start out as an overnight delivery service. It started overnight delivery service in 1982,

and today a large part of its business is still second day or later air service.[11]

Employment

The total number of employees in the nation's airline industry at the beginning of 1990 was almost 550,000. This is an increase of 7% over 1989. As predicted, the growth rate in employment has indeed slowed through the decade of the 80's (see figure 3).[12] The growth rate increase of 7% is no longer current since approximately 200,000 airline industry workers lost their jobs in 1990 and 1991 due to layoffs and the failure of major airlines such as Eastern and Pan Am.[13] This will bring the employment numbers down to the 1980 level. The decade of the 90's will be one of negative growth initially and then struggle to regain the 1990 figure of 550,000.

However, the US Department of Labor is more optimistic. Citing two examples from its 1990-91 edition of the Occupational Outlook Handbook, employment of pilots and ticket agents through the year 2000 is predicted to increase much faster than the average for all other occupations. For pilots, the handbook still expects a large number of retirements which should make room for new airline pilot hires. As for the ticket agents, it says "a growing and more travel-oriented population will increase the number of passenger miles, which, in turn, is expected to increase demand for agents and clerks."[14]

Barriers to Entry

Entry barriers provide an interesting study in perspective. The barriers to entry are relatively small if one is just trying to establish an airline but considerably greater if an established airline is trying to enter a particular market.

To start an airline, all one needs is an airplane (which may be leased), a qualified crew (plenty are available), and some strategy to get passengers or cargo to fill up one's plane. Of course this is an oversimplification, but it is almost that easy. There are no factories to build, no tracks or road to build, and generally no airports or terminals to construct, etc. There are, however, landing fees, aircraft maintenance, advertising costs, etc. Generally speaking, the economic barriers to start up are small.[15]

On the other hand, if an airline wants to enter an established market segment (e.g. Atlanta to Washington, DC) the entry barriers are significant. The Government Accounting Office (GAO) cites incentive programs (Frequent Flyers, etc.), travel agent commissions, computerized reservation systems, plus hub and spoke systems as barriers.[16] The company wanting to compete on this route would have to do so with two of the giants, Delta in Atlanta and US Air in Washington. Delta's main hub is in Atlanta and US Air has a major one in Washington which means a large number of flights into and out of both cities by these and other carriers. A new airline would need a significant schedule offering to survive. The expense of incentive programs, payments to travel agents, gate leases, etc., could mean little or no

profits for all but the major carriers on this route. Additionally, at Washington National airport there are restrictions on aircraft that can be flown in and out. All of these barriers have to be evaluated before beginning service. However, except where physical or political constraints limit overall operations, there is no evidence that any of these entry barriers really have prevented market entry.[17]

Civil Reserve Air Fleet

The CRAF is a system by which the military's airlift capability can be augmented with commercial airlines in time of national crisis. As mentioned earlier, the US wouldn't have been able to deploy the required forces to the Middle East during Desert Shield and Desert Storm if we did not have this augmentation. CRAF can be activated in any of three stages. Stage I adds 18 long range international (LRI) passenger aircraft and 23 LRI cargo aircraft to the airlift capability for "committed airlift expansion." The Commander-in-Chief of the Military Airlift Command (CINCMAC) has the activation authority for stage I and the airlines have a 24-hour response time. CINCMAC activated stage I on 18 August 1990 for the first time in CRAF's 38 year history. Stage II can be activated for an airlift emergency short of national mobilization (24-hour response time). There are 175 aircraft in this stage: 77 LRI passenger, 40 LRI cargo, 21 short range international (SRI) passenger, 2 SRI cargo, 37 domestic cargo and 4 Alaskan cargo. The Secretary of Defense

(SECDEF) has to approve activation of stage II. On 16 January 1991, SECDEF activated stage II, but only used 17 LRI cargo aircraft. The last segment, stage III can be activated by SECDEF during a defense-oriented national emergency declared by the President, or in time of national-emergency declared by Congress. Here the participating airlines have a 48-hour response time. Aircraft in this stage are: 250 LRI passenger, 150 LRI cargo, 37 domestic cargo, 28 SRI passenger, 6 SRI cargo, and 4 Alaskan cargo. Activation of stage III during Desert Storm was discussed but not implemented.

The CRAF airlines (see figure 4) are designated by letters of agreement between the Military Airlift Command and each airline. In addition to the aircraft committed, they provide approximately four crews per plane during the call-up. In return for participation in CRAF, DOD contracts peace-time business with the carriers based on the number of airplanes that each airline has dedicated to the fleet. Additionally, some aircraft have been modified to carry patients for aeromedical evacuation and some passenger airplanes have been configured for cargo convertibility, by strengthening their floors. These modifications were done at Defense Department expense. When floors have been strengthened, DOD pays the increased fuel cost to carry the additional weight of the modification. Pan Am's flight 103, lost through terrorism, was one of the CRAF cargo convertible aircraft.[18]

During the Gulf War, CRAF provided crucial airlift by transporting two-thirds of the troops and 25% of the air delivered cargo to the Middle East. If needed, the total CRAF

commitment of the nation's airlines can provide about half of the airlift capability of the United States.[19]

The CRAF letters of agreement are up for renewal this year and there is speculation that some CRAF participants may not renew their agreements. Some carriers believe their commitment to the Gulf War contributed to the huge losses in 1991.

CONDUCT

The main objective of any company is to provide products and/or services at competitive rates within an industry. *Conduct* of the airline industry looks at some major costs of doing business, pricing policies, and investments for airlines in order to maintain competitiveness in the market place.

Costs

Fuel costs are a large portion of the operating costs of any airline. It is not the largest expense in an airline's operating expense column, but it is the one that fluctuates the most and is watched very closely. In fiscal year 1990, the average cost of a gallon of jet fuel was $0.676; this is an increase of 19.9% over the 1989 numbers. This increase has a negative impact on an airline's yearly operating expenses, estimated at an average increase per carrier of $1.8 million. In 1991, with the Iraqi invasion of Kuwait, the prices of fuel skyrocketed to a high of $1.113 per gallon in September and were forecasted to stabilize

around $0.80. The 10 year projections call for an annual increase of 6.1%.[20]

To compensate for these increased costs, most major airlines are implementing more efficient aircraft operating procedures and purchasing new aircraft with greater payload capacity and more efficient engines. They contract with major oil refiners for large amounts of fuel to be stored in their own fuel farms at hub locations. The largest fuel users even purchase some lesser amounts at spot market in an attempt to keep costs down.

Another major cost for the airlines is employees. The average for the four carriers being discussed is around 30% of their total operating expenses. Employee related costs (wages, salaries and benefits) are fairly constant and little can be done to decrease them. However, there are concerns from major shareholder groups regarding top executives' pay. United airlines, for example, is under pressure from the United Shareholders Association to make a clearer disclosure of the split between annual pay and bonus. Specifically questioned is the practice of top company executives getting bonuses in the millions while the company is losing money.[21]

Other major costs of doing business for the airlines include landing and ramp fees, maintenance, government dictated modifications to aircraft (primarily noise reduction and safety), and modernization of computerized reservation and scheduling systems. All of these costs continue to rise without expectation of their declining in the near term (see figure 5).

Pricing

To understand airline fares, one has to go back to the days of airline regulation to see how prices were derived. Ticket prices were established on a mileage-based formula developed by the CAB that took only a portion of costs into account. Discount fares were not widely used except for a reduced rate for night coach, which required a 30 day advance purchase, and a seven day minimum/45 day maximum stay.

Today, fare structures are based on markets in which they operate and the airlines factor-in the associated costs. Prices do vary in the same market based on demand for certain flights. One advantage of pricing after deregulation is the increased number of discount fares available. The object of discount pricing is to increase the "yield," which is the amount of revenue received by airlines per passenger mile (or cargo ton-mile). When a scheduled flight operates between point A and point B, the company's goal is to fill up as many seats as possible increasing the yield and thus increasing marginal revenues, hence the proliferation of discount fares. See Figure 6 for passenger yield. However, one hazard of the dominance of discount fares is that their success in filling empty seats may entice airline management to buy more aircraft, hire more personnel, plus expand reservation and ticketing facilities.[22]

It is clear that discount fares benefit the flying public by keeping ticket prices down while providing increased revenues for airlines by filling empty seats. On the other hand, some argue that full fare customers are subsidizing the discount passengers.

All indications are that the current system of pricing will remain within the industry for the foreseeable future.

Cargo rates are calculated differently than passenger rates. They fall into three basic categories: general commodity rates, specific commodity rates, and exception ratings. As the name implies, general commodity deals with most types of cargo and pricing is based solely on the cargo's weight. Carriers have rate schedules (some based on direction of movement) for all cities they serve. Specific commodity (sometimes called class rates) prices are designed to attract and retain business from certain items normally shipped by means other than air. An example might be newspaper's normally shipped by truck. An air carrier might offer a discount of 20% to get the newspapers business. The exception rating is charged for items like fresh flowers, live animals, and high value items or other items with special handling requirements. These items generally incur the highest air shipment rates. Some carriers offer discounts for container shipments and for shipping during slack periods.[23] Figure 7 shows the cargo yield, which decreased from 1989 to 1990.

Investments

Competing in today's airline industry takes a large investment of capital for maintenance facilities, computerized reservation and ticket counters, cargo handling systems, fuel storage farms, vehicles, etc. But by far the biggest investment

is in aircraft. Domestic airlines took delivery of 257 large jet aircraft in 1990. Of these, 229 were two engine narrow body planes. Orders for an additional 392 were placed in 1990.[24]

Today's aircraft generally have a life cycle of about 25 years. The deliveries and orders for new planes reflect the aging fleet and the need to replace those that are fuel inefficient and do not meet the standards of the national noise policy. Fleet replacement will continue at a fairly constant rate for the next five years. Firm orders for 1,324 aircraft with an option for another 1,424 are documented by the Air Transport Association. A break down of firm orders are: 270 in 1991, 259 in 1992, 229 in 1993, and 566 in 1994 and beyond. The value of firm aircraft orders is $65.3 billion.[25]

The operating fleet of the US airline industry currently stands at 4,275. With the orders for new aircraft at 1,324, figures indicate replacing 31% of the fleet in the next few years and if the options are exercised for another 1,424 the percentage goes up to 64%.[26]

PERFORMANCE

Profitability

According to February 1991 Department of Transportation (DOT) figures, the US airline industry suffered an $820.2 million loss in 1990, as opposed to a 1989 profit of $942.2 million. As mentioned earlier, causes for the down turn in profitability were rapid increases in jet fuel prices, slowing US and world

economies, decrease in air travel during the Gulf War, and an increase in operating expenses. The DOT reports a large portion of the increase in operating expenses is servicing of the industry's long term debt which totaled $13.2 billion in FY 1990. This is a 14.6% increase over FY 1989 and triple the amount prior to the start of deregulation.[27]

Figures on our top four passenger and top two cargo carriers profitability for 1990 are listed below.

PROFITABILITY
Table 1

Passenger Airlines	**Net Profit/(Loss)**
American Airlines	($ 76,777,000)
Delta Air Lines	($154,033,000)
Northwest Airlines	($ 10,412,000)
United Airlines	$ 95,755,000

Cargo Airlines	**Net Profit/(Loss)**
Federal Express	$127,366,000
United Parcel Service	$ 38,449,000

Source: Air Transport 1991

Generally, passenger carriers lost money and cargo carriers made money. This trend is expected to continue for the next couple of years. We have already seen some of the financially weaker carriers (Continental, TWA, US Air, etc.) start to

discount fares further in an attempt to increase cash flow without taking profitability into account. The DOT looks for heavy discounting in the next two years to fill empty seats and increase yield. This will likely continue the decline in industry profits, and push more carriers into bankruptcy and/or mergers (concentrating the industry more than it already is).

In any free market economy, the object of business is to make a profit. Over the past several years the airline industry has seen the demise of many major carriers -- Braniff, Eastern, National, Western, and most recently Pan American. In 1990, Pan Am lost $638,074,000 which was the proverbial "straw that broke the camel's back." Why did America's best known worldwide flag carrier fail? Pan Am's founder, Juan Trippe, built an airline that grew to be a dominant international carrier that functioned as an "unofficial" arm of US diplomatic and trade policy. He devised routes and schedules as much to further national interest as to meet commercial needs. For years Pan Am operated around-the-world flights and one into Moscow more for international prestige than for profit. This route structure worked during regulation -- but Trippe and his airline didn't change with deregulation. The competition began shifting to formal, analytical fleet, route, and profit planning systems while Pan Am's plans were in Trippe's head. "The virtues that had enabled him to build Pan Am had become vices. When he retired, his plans and strategy, flaws and all, went with him. Instead of inheriting a formal corporate strategy to build on, Trippe's successors were left to wing it."[28] Near the end, they tried many quick fixes -- low fares, schedule shuffling, and an

emphasis on particular market segments to keep up cash flow. Finally they had to sell off assets to try to recover. Delta bought the Pan Am Shuttle and entered into a financing deal to try to keep Pan Am solvent. On 30 January, 1992 Pan Am filed a $2.5 billion suit, accusing Delta of breaching its contract. Delta, which also faces a suit from Pan Am's creditors, denies responsibility for Pan Am's death. The bottom line is the airline's continued failure to make a profit caused its demise.[29]

Productivity and Capacity Utilization

The two most common measures of productivity in the airline industry are revenue miles and load factors. Revenue passenger miles (RPM) and revenue ton miles (RTM) measure the traffic on an airline that results in revenue generated. For example, an airplane with 120 seats flying 100 miles has the potential to produce 12,000 revenue miles. If the plane is full but only 100 passengers are paying customers (some seats may be filled with airline employees or frequent flyers using free tickets), that trip only produces 10,000 RPMs. Load factor, on the other hand, is the percent of available seats filled. Using our 120 seat airplane again, if only 100 seats are filled, the load factor is 83%.

The following is the Air Transport Association's comparison of 1989 and 1990 for the US airline industry's productivity.

PRODUCTIVITY
Table 2

Passenger Traffic	1989	1990
Revenue Passengers (000)	453,692	465,557
Revenue Passenger Miles (000)	432,714,309	457,915,220
Available Seat Miles (000)	684,375,876	733,353,609
Revenue Passenger Load Factor (%)	63.2	62.4
Cargo Traffic (Ton Miles)		
Total (000)	12,186,497	12,603,656
Freight and Express (000)	10,275,002	10,600,100
US Mail (000)	1,878,651	2,003,556

Source: Air Transport 1991

Looking at the four leading passenger carriers for calender year 1991, the RPMs were up across the board while load factors increased for Delta and United. They decreased slightly for American and Northwest. On the cargo side, RTMs increased for both Federal Express and United Parcel Service.[30]

These figures reflect the continuing negative trend for passenger airlines and the positive trend for cargo airlines. One positive side note for the passenger carriers: DOT reported consumer complaints were down 38% in 1991. The high month had 468 complaints filed as opposed to the 1990 high month of 642 complaints. The carriers were arriving on-time 82.7% of the time and posted low rates of mishandled baggage.[31]

ENVIRONMENTAL MATTERS

The airline industry, like other industries, is being held accountable for restrictions under environmental regulations. Three will be mentioned that will potentially impact profit margins of major airlines.

The most significant restriction for the industry comes from The Noise Control Act of 1972. This legislation requires jet aircraft to meet lower noise levels by the end of 1999. There are phase points along the way dictating what percentages of aircraft must meet the new standards. Standards can be met by modifying existing engines or replacing the aircraft with new ones. All the companies examined here have plans to meet the requirements but these plans will put an additional financial burden on some (another straw for the camel's back).

The Environmental Protection Agency is investigating several airlines for use of aerospace coatings (paint) with volatile organic compounds that exceed regulatory limits and for underground contamination by fuels leaking from tank farms at various airports. These findings could lead to additional expense for the airlines involved. Regardless, the industry is being impacted by increasing environmental regulation from both the state and national level.

AIRPORTS

The issue of airport capacity is becoming a major concern for the airline industry. The large hub airports are nearing or

exceeding intended capacities; some are expanding and some are restricting operations. Many cities are building new airports with plans to shift operations from existing airports. The dilemma this poses is increased cost to the airlines. The cities building new facilities (or expanding old ones) are betting that the industry will be healthy enough to use the airports. Kansas City knows the consequences all too well. In the '70s the city built a new airport to be used as a hub by TWA -- instead TWA went to St. Louis. The city then offered the facility to Braniff, but they went out of business soon after. Eastern moved in but didn't make enough money to stay. Braniff came out of bankruptcy and tried to make another go of it, operating out of Kansas City until the airline went out of business again in 1989.[32]

Other major cities that are building are Denver -- a new $2.4 billion airport; Memphis -- a $177 million runway expansion; Atlanta -- a $300 million international terminal; Pittsburgh -- a $690 million terminal; and Newark -- a $2 billion redevelopment. The problem with these expansion plans is that all cities mentioned, except Denver, experienced a decreased traffic flow in 1991. Although Denver saw a 3% increase in traffic in 1991, its second largest carrier is Continental which is in financial trouble, reorganizing under Chapter 11 in an attempt to come out of bankruptcy.[33]

CONCLUSION

The airline industry as a whole is in poor health. Some carriers are in better shape than others, with the cargo segment of the industry better off than the passenger segment. The industry is becoming dominated by a few carriers, and the demise of major airlines should be of concern to the nation.

Industry-wide costs are high and getting higher. Pricing in the passenger segment is not covering these costs, which is the biggest reason that they are not showing a profit. On the other hand the cargo segment pricing is covering the costs and it is showing profits. It seems that passenger carriers are chasing marginal revenues (through discounted fares). The weaker carriers are trying to maintain market share (by reducing fares), and the stronger carriers are forced to match those ticket prices to stay competitive. A danger with this cycle is that as more airlines go out of business the remaining ones may be tempted to raise prices to cover costs, which makes it more difficult for the flying public to afford tickets. There does not seem to be an easy way out of this downward spiral.

Productivity is up industry-wide; however for the passenger carriers, this trend reflects increasing load factors through use of discounted fares -- again evidence of the spiral.

While the airline industry mirrors the economy, it is not certain that as the nation recovers from the current recession, the airline industry will follow. If the huge monetary losses continue, more carriers will be following Eastern, Pan Am, and others in bankruptcy. The industry must have its stability and

financial well-being restored. Air transportation is a critical part of the United States' infrastructure and its good health is absolutely necessary for national security.

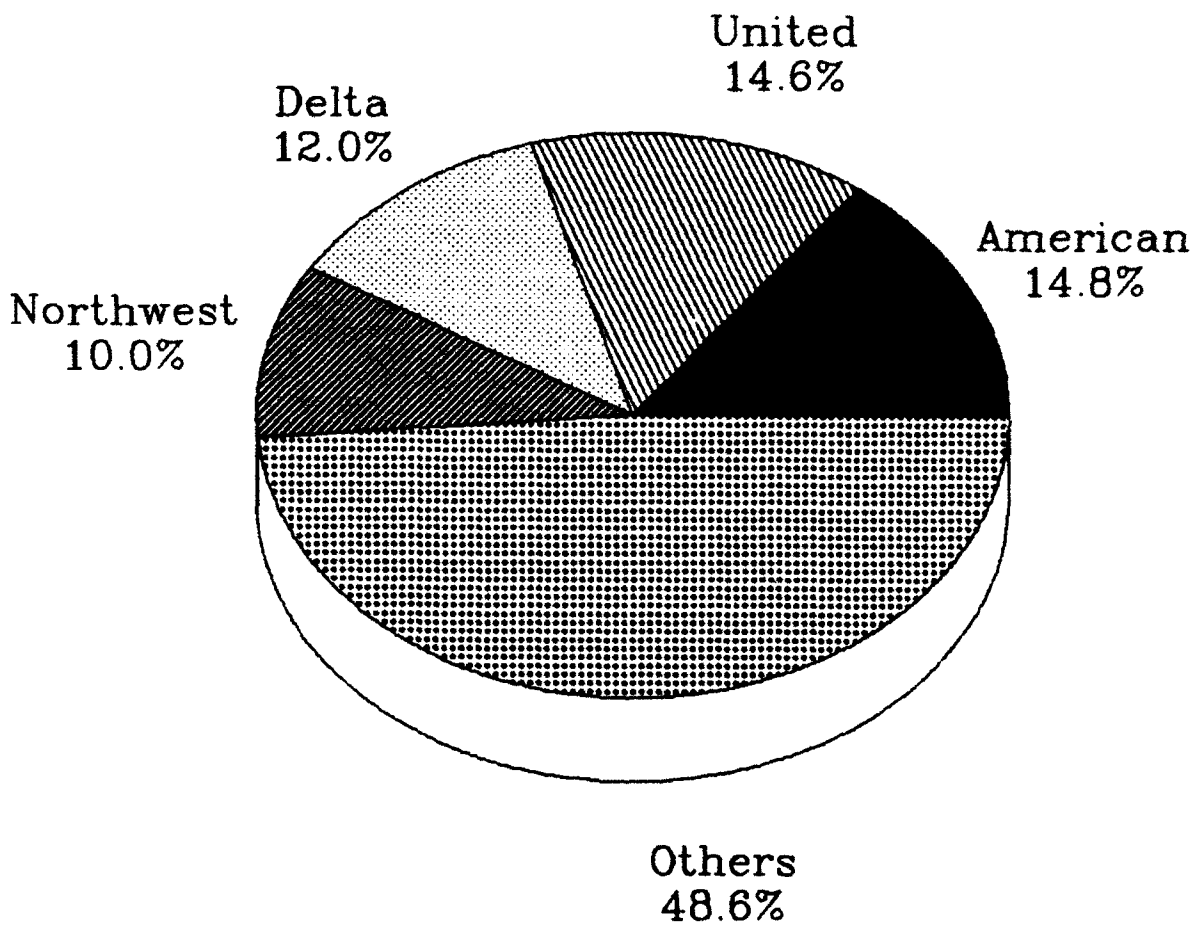
Total Operating Revenues

Figure 1

AIRLINE	TOTAL ($000)
American	11,008,677
United	10,956,059
Delta	8,746,083
Federal Express	7,612,986
Northwest	7,257,110
USAir	6,084,704
Continental	5,202,234
Trans World	4,606,082
Pan American	3,930,722
Eastern	2,181,796
America West	1,321,642
Southwest	1,186,831
Alaska	895,741
United Parcel Service	891,090
Midway	614,809
American Trans Air	369,628
Hawaiian	340,024
World	243,681
Evergreen	217,608
West Air	209,764
Air Wisconsin	196,649
Aloha	188,852
Tower	172,285

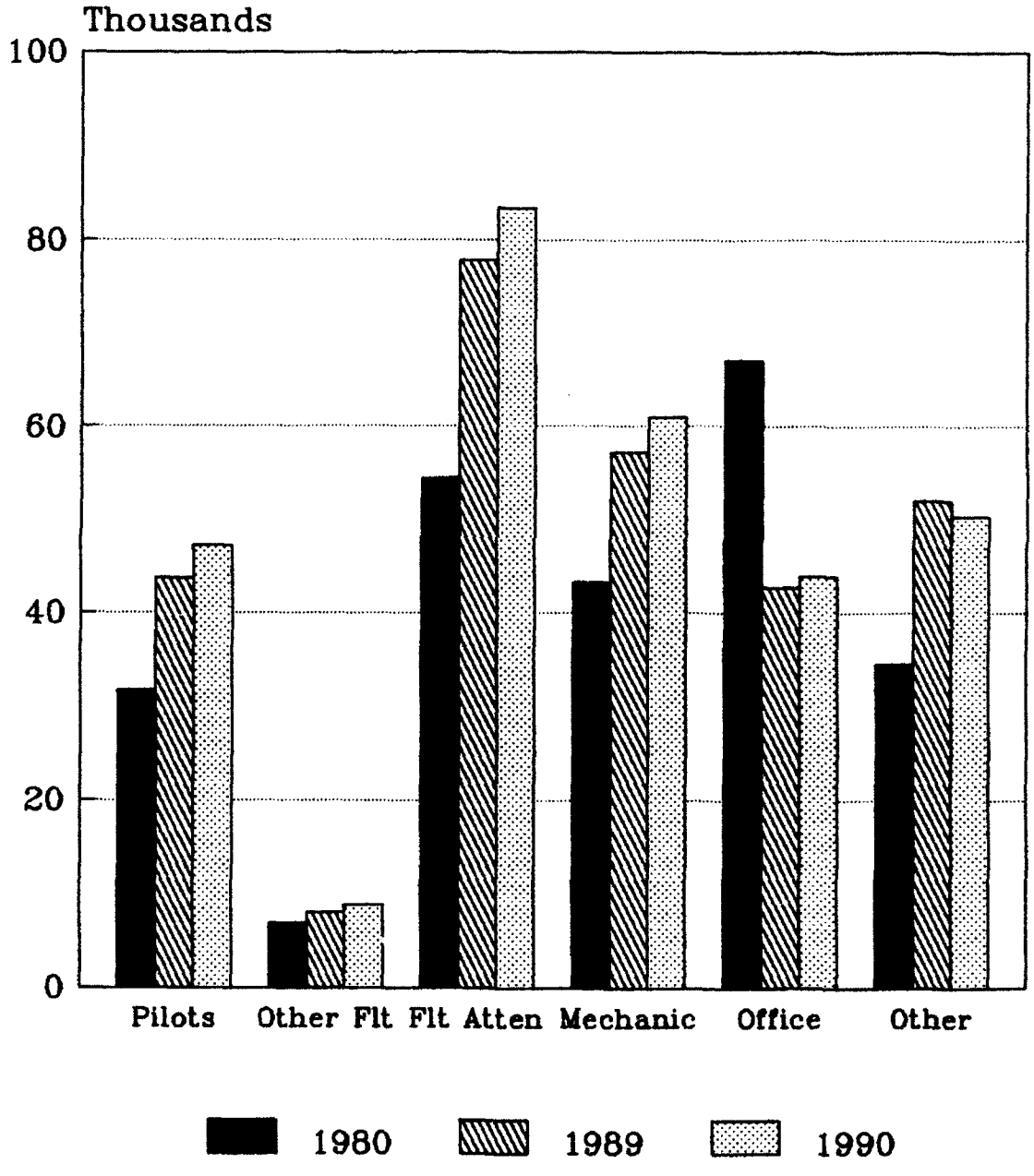
Source: Air Transport Association

Passenger Airline Concentration
Figure 2



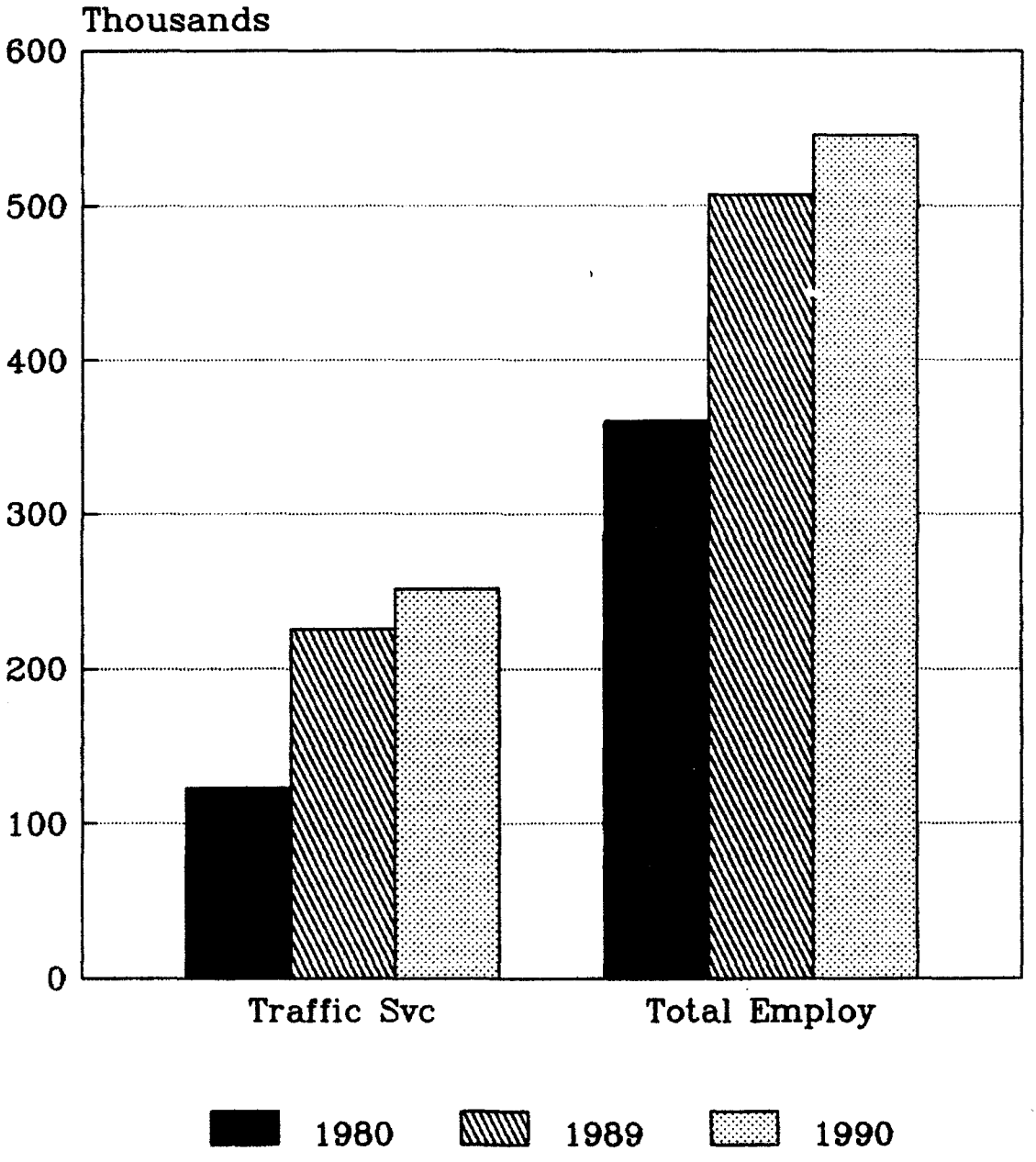
Source: Air Transport Association

Employment
Figure 3



Source: Air Transport Association

Employment
Figure 3a



Source: Air Transport Associtation

CRAF Carriers

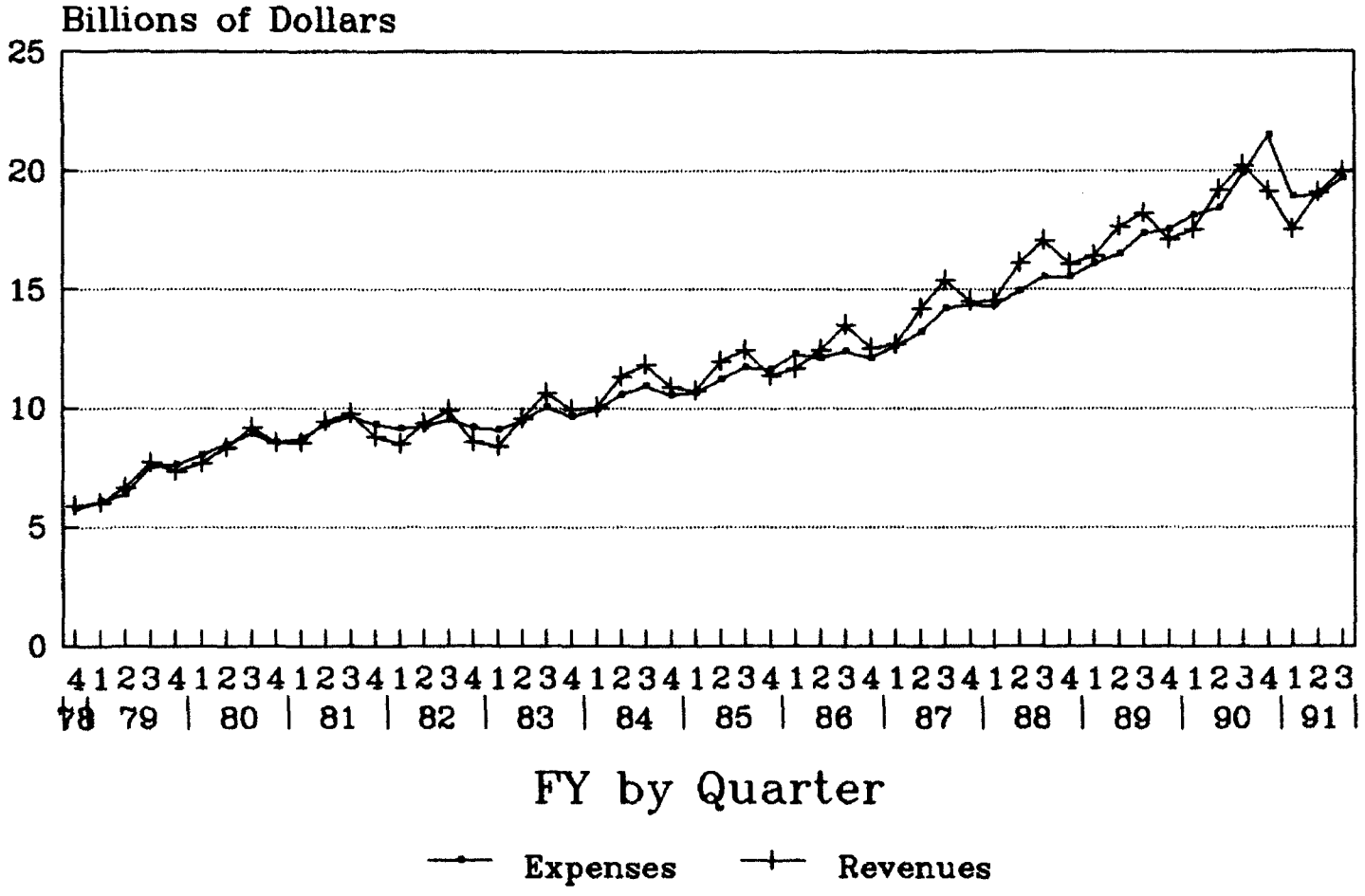
Figure 4

American	Northwest
American Trans Air	Reeve Aleutian
ATI	Rosenbalm
Connie Kalitta	Southern Air
Continental	Sun Country
Delta	Tower Air
Emery Worldwide	TPI
Evergreen	TWA
Express One	United
Federal Express	UPS
Key	World
Northern Air Cargo	Zantop

Source: HQ/MAC

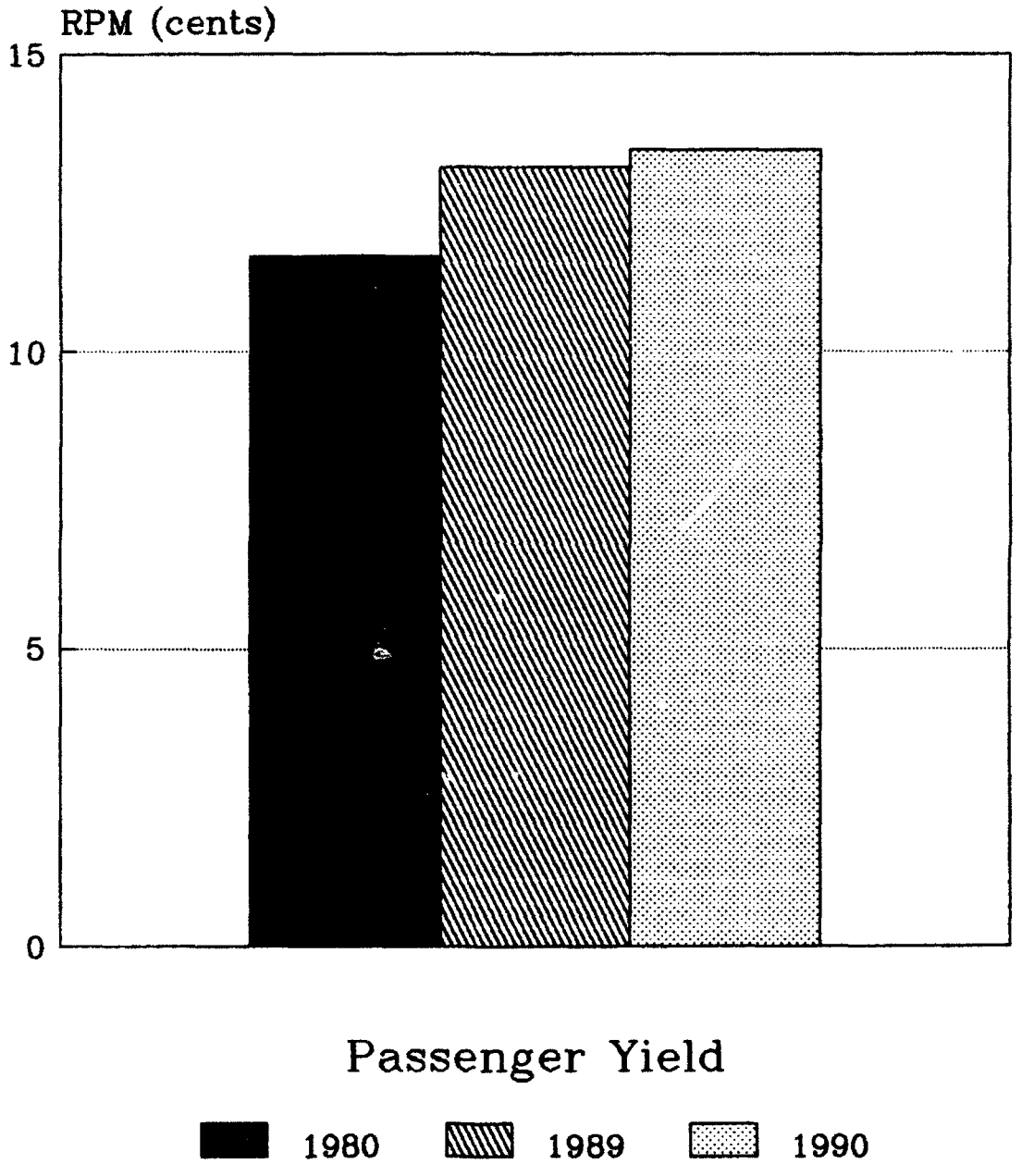
Revenue & Expense Trends

Figure 5



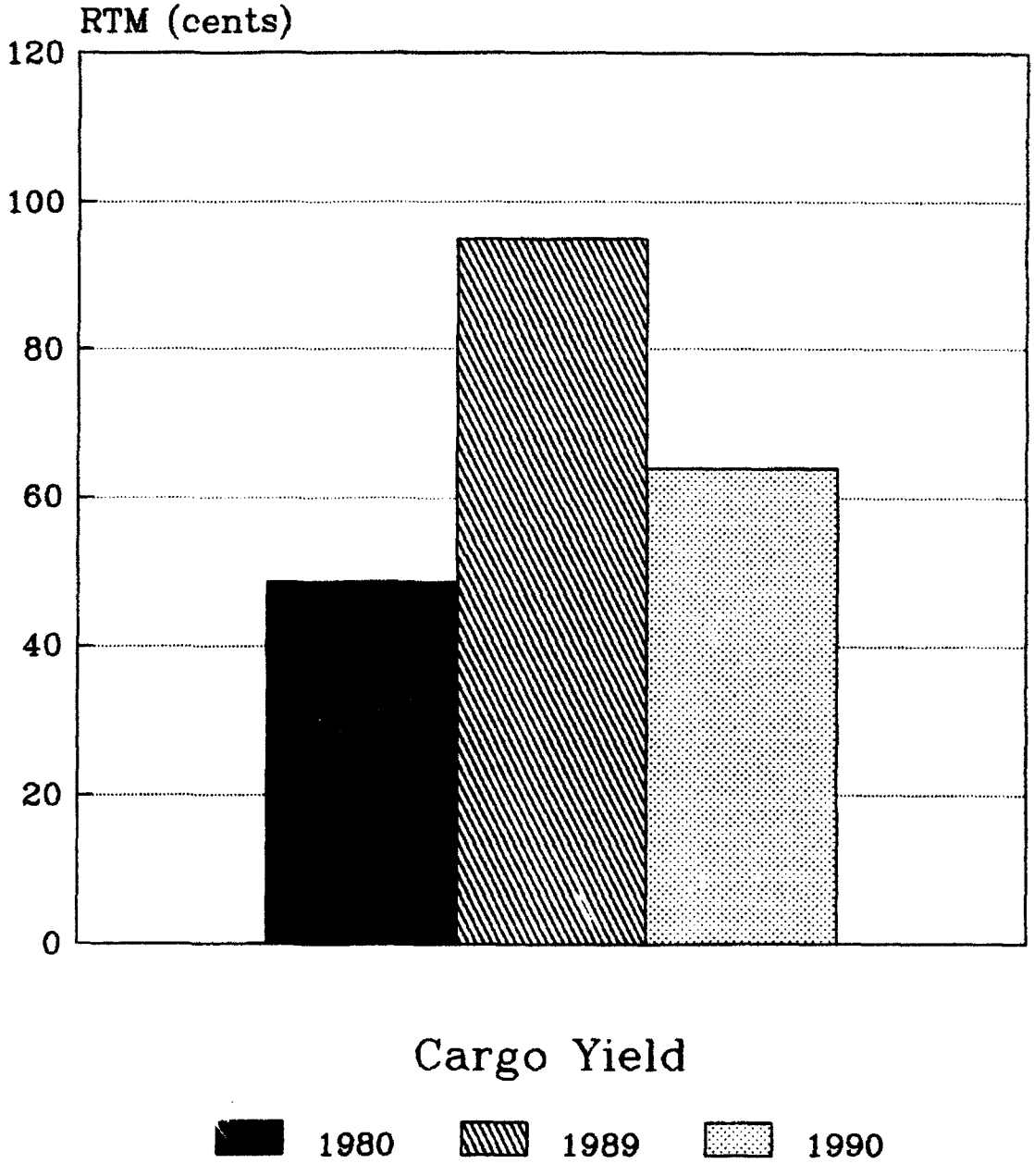
Source: Selected Carriers Chosen by FAA

Passenger Yield
Figure 6



Source: Air Transport Association

Cargo Yield
Figure 7



Source: Air Transport Association

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